

**Title: High-resolution physical stratigraphy of the Cenozoic siliciclastic successions of the Southern Apennines: climatic and tectonic implications**

**Tutors: Alessandro Iannace**

**Co-tutor(s): Kei Ogata, Roberto Tinterri (Università di Parma)**

**Proposal:**

The Paleocene (?) to Miocene foreland siliciclastic systems of the Southern Apennines record the mutual interaction between synorogenic tectonic phenomena (e.g. accretion-continental collision) and sudden climatic transition scenarios (e.g. PETM, EECO, MECO, EOT, Oi-1, OMB, Mi-1, MMCO). These wedge-top and foredeep successions (and their marginal counterparts) show significant facies and compositional differences, suggesting a complex physiography of the source-to-sink system, especially in the longitudinal direction of the chain, which is superimposed by a particular paleoclimatic context characterized by high-frequency glacial-interglacial cycles, with large relative variations in local base level, and a general trend towards increased rates of erosion and sediment transport. In this context, a detailed study of the connections between turbidite and fluvial-deltaic systems is still missing. The recent resumption of geological surveying for the new CARG sheets has highlighted the possibility of stratigraphic correlations on a local and regional scale which would allow these successions to be contextualised within a wider basin system, synchronizing periodic and episodic sedimentary events. The calibration of such a geological archive is essential for understanding the tectonic-climatic dynamics of the central Mediterranean area and its future evolution.

**Research Program:**

The proposed PhD research project will be focused on the Cenozoic siliciclastic successions of the Southern Apennines that fall within the framework of the recently launched new CARG sheets, with the aim of a better understanding of: i) the stratigraphic and tectonic relationships between the various depocentral zones of the foreland system, transversely and longitudinally; ii) the relationships between internal and external feeding zones, and the preferential pathways of sediment distribution; iii) the "extreme" sedimentary events (e.g. basinal carbonate megabeds) whose large-scale correlation is still missing, as well as their palaeoenvironmental significance. In this perspective, the project will use data available from the literature, field investigations, remote sensing and laboratory analyses.

The project will be carried out in collaboration with the University of Parma and will be coherently organized in several successive phases: i) literature analysis (6 months), ii) identification of sites and case studies, and preliminary fieldwork (6 months), iii)

reconstruction of geological working models and field verification (6 months), iv) field work (6 months), v) period abroad (6 months), vi) doctoral thesis preparation (6 months).

The candidate's expenses for the fieldwork, analyses and other activities related to the doctoral project will be covered by the departmental funds of the Tutors and the CARG project. The candidate should have a solid background in stratigraphic and structural geology, sedimentology and a good general knowledge of computer science. The candidate will also complete a training/research period at a foreign institution.

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